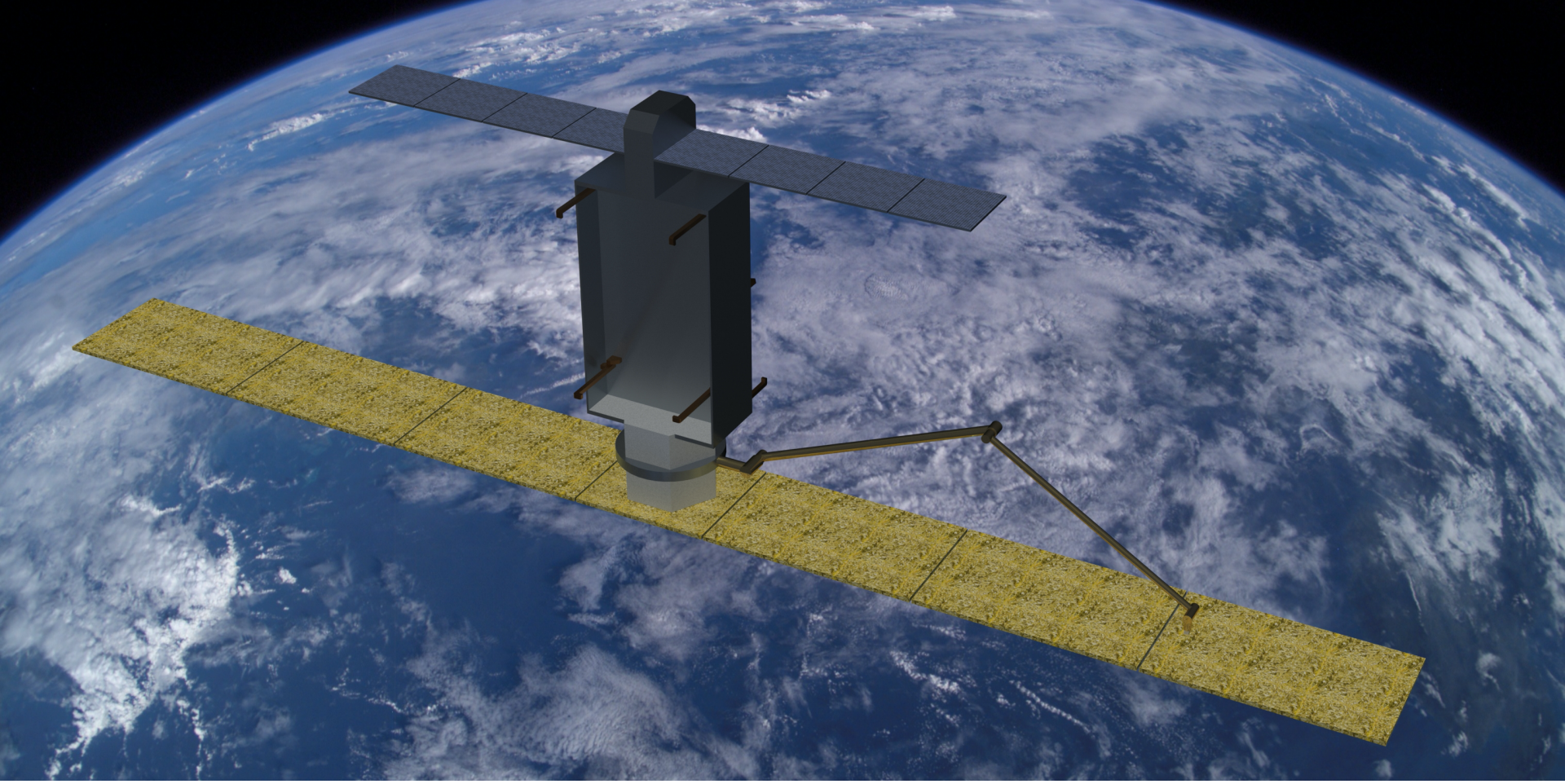


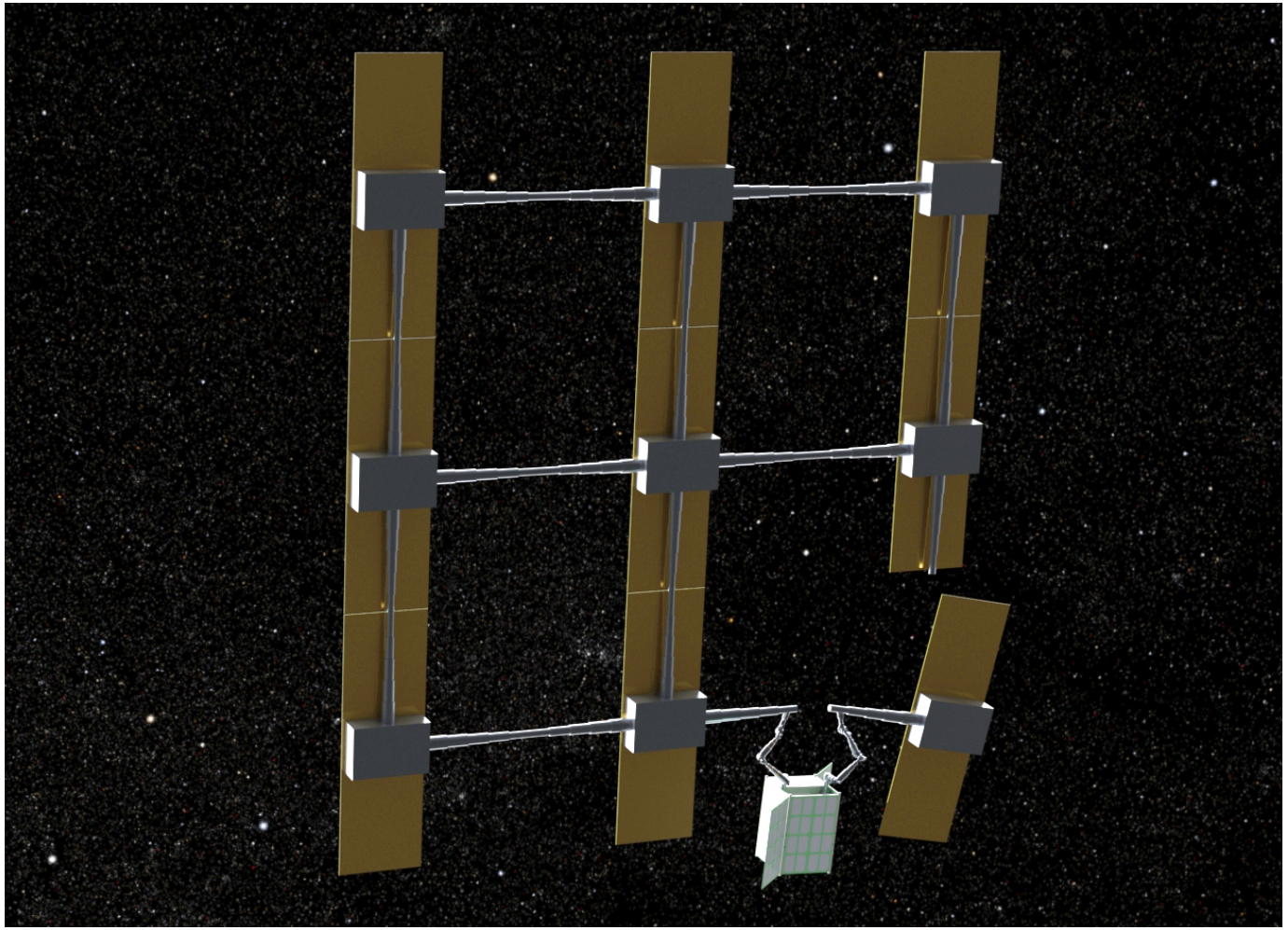
In-Space Assembly (ISA) for SDC

Ryan McCormick (ryan.l.mccormick@jpl.nasa.gov)
Rudranarayan Mukherjee (Rudranarayan.M.Mukherjee@jpl.nasa.gov)

Jet Propulsion Laboratory
California Institute of Technology

CubeSat In-space Assembly (ISA)

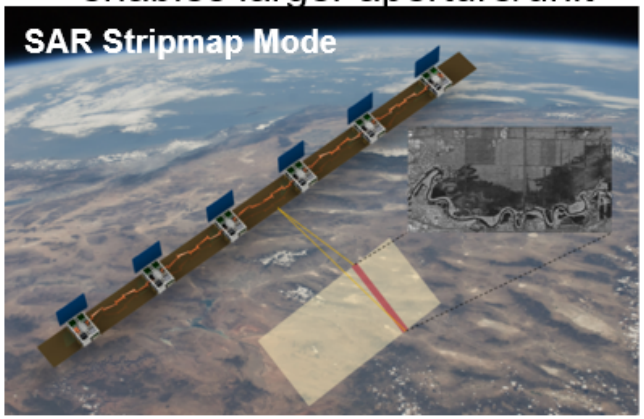
Tug CubeSat assembles modules



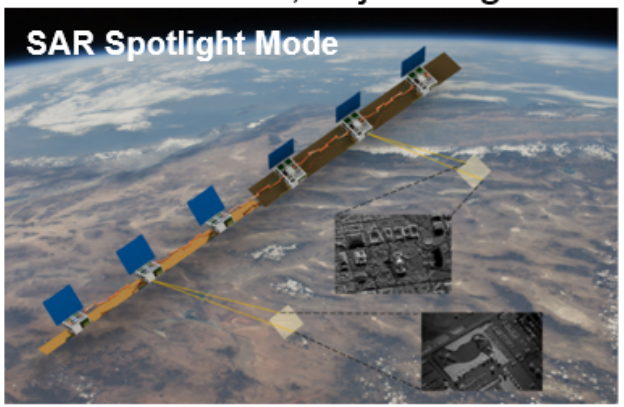
C-FORM: Cluster Forming On-board Robotic Manipulator

Individual CubeSats rendezvous and assemble

Large Aperture Assembly: Separation distance enables larger aperture/unit

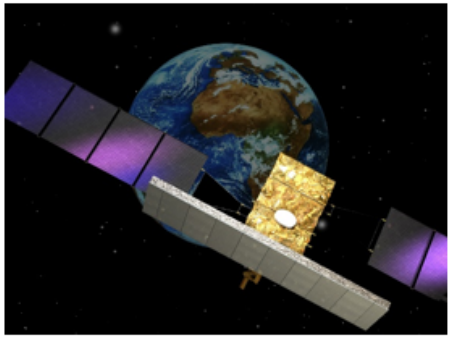


Relative Repositioning: Scan or stare with instruments, adjust alignment



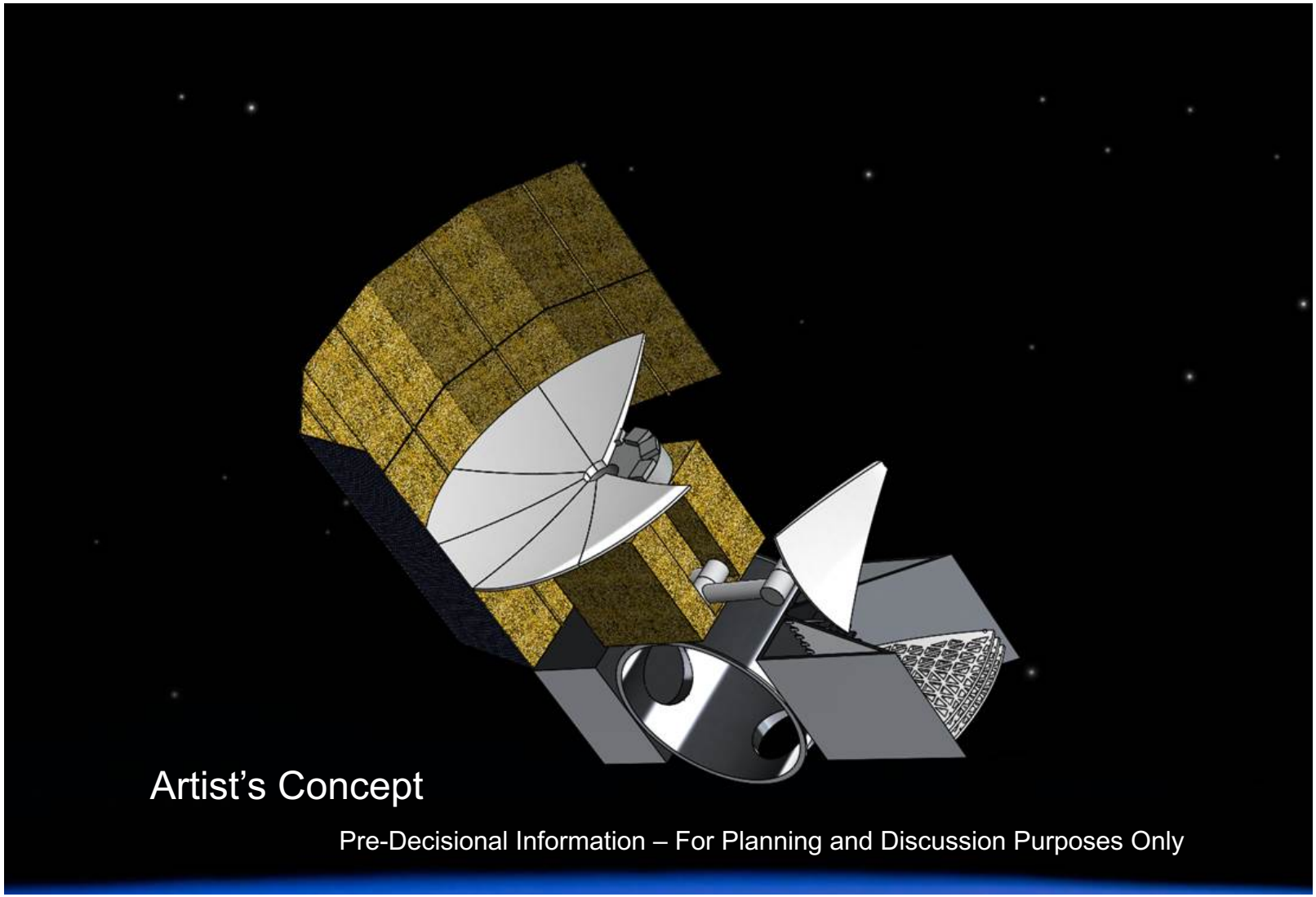
Reconfiguration: Add additional capability or replacement individual units

Comparison: COSMO-SKYMED SAR Satellite



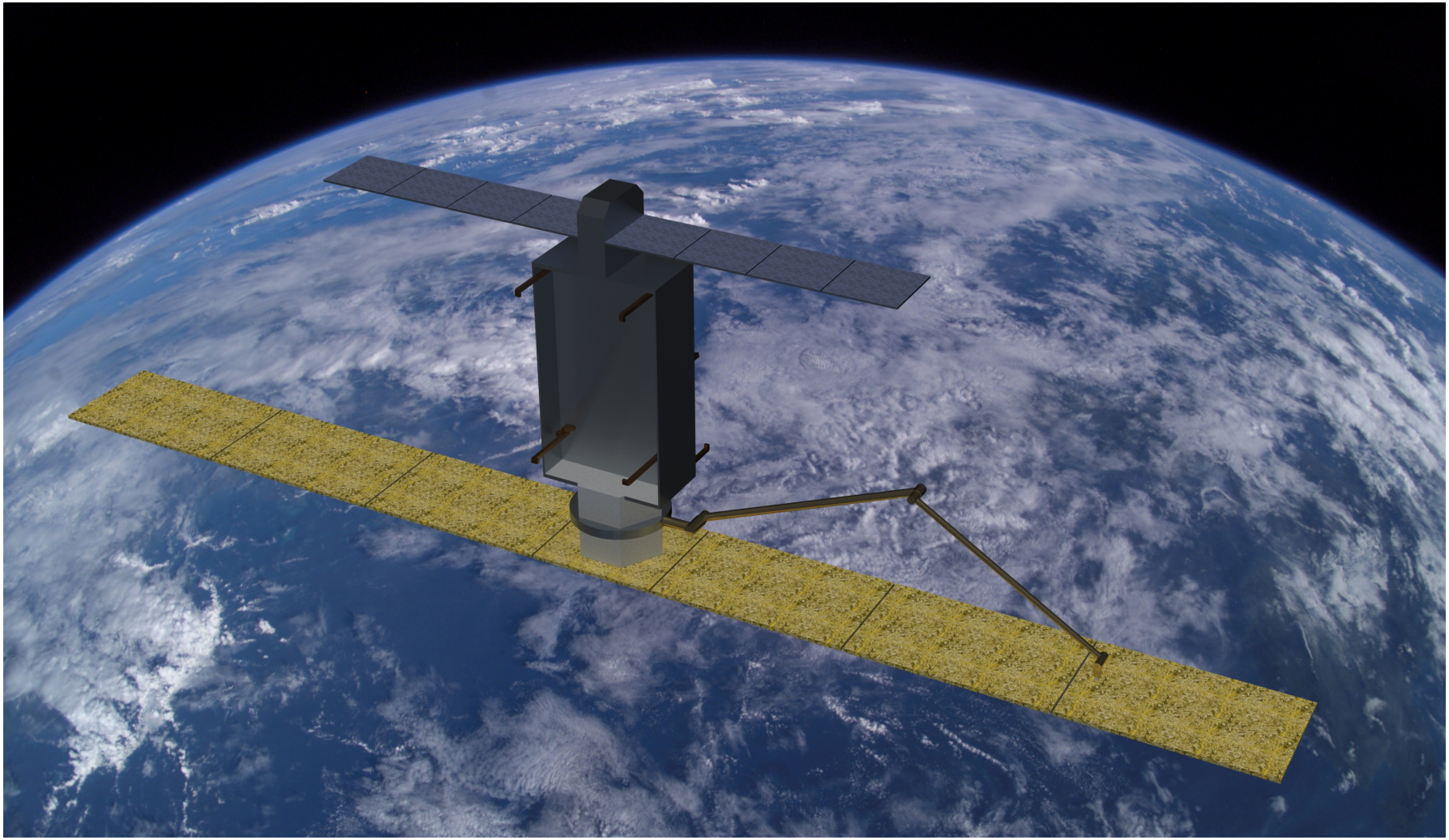
COSMO-SKYMED Rendering (ESA)

Assembly from Secondary Launches

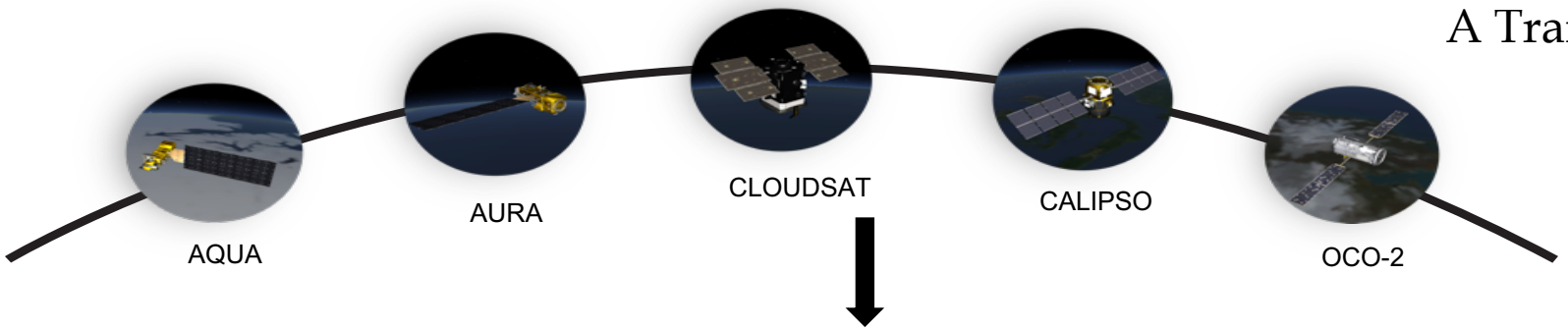


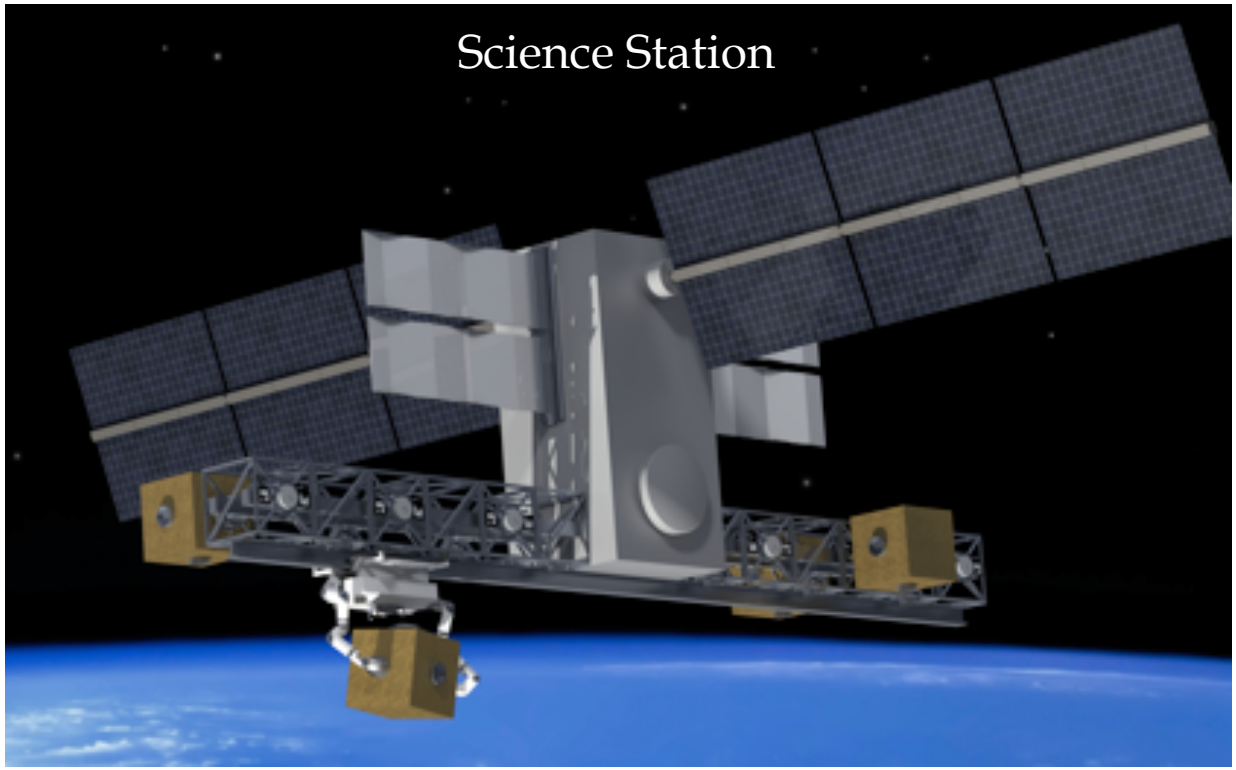
Traditional Launch In-Space Assembly (ISA)

On-board robotic arm assembles large structures from on-board components



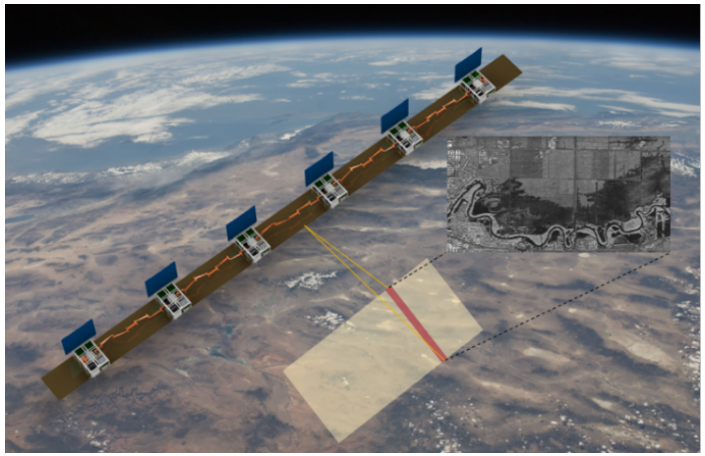
Persistent Platform in LEO

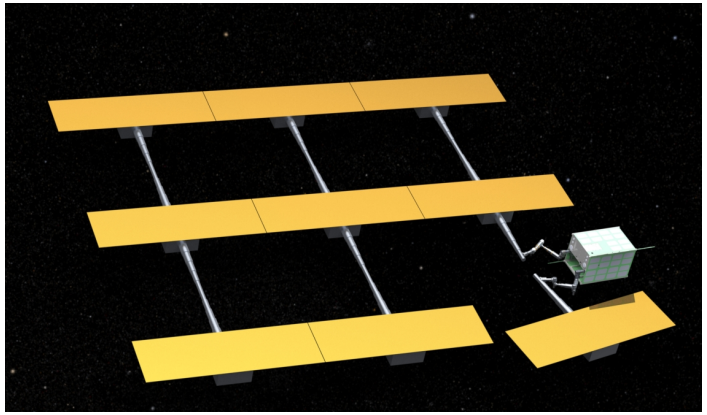


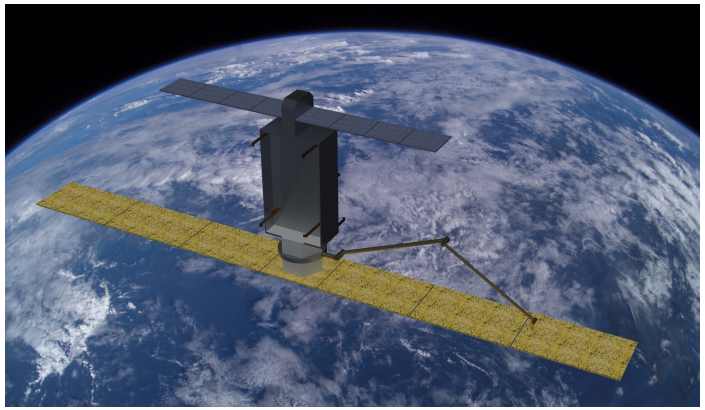


Benefits to ISA

- Enabling for sizes not possible today
- Enabling for frequencies not possible today
- Traditional or secondary launch vehicle
- Flexibility in different implementations
- Higher stiffness
  - Folding techniques require depth to hold the structure rigid that is difficult incorporate in the fold
- High aspect ratios
  - Tension techniques require nearly equal aspect ratios for stability and flatness
- Higher launch packing efficiency
- Once developed, feed forward to other missions
  - same basic architecture/implementation







BACK-UP

Assembly Demonstration Video

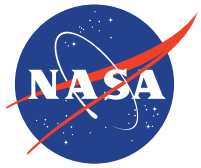
REMORA Video

REMORA: *Re*configurable *M*iniature *O*rbital *R*obotic *A*sset

In-Lab Demo: Oct 31, 2017

Principal Investigator: Dr. Rudranarayan Mukherjee
Team: Ryan Mccormick (Technical Lead), Spencer Backus, Kristopher Wehage, Alexander Austin

Program Manager: Dr. Gordon Roesler
DARPA Tactical Technology Office



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